Amendments to the Claims

1   1. (original) A method for encoding a video including a sequence of frames,
2   comprising:
3   measuring a variance of pixel intensities in a current frame;
4   assigning, according to rate and buffer fullness constraints, a number
5   of bits to encode the current frame;
6   determining a multiplier value directly as a function of only the
7   variance and the number of bits assigned to the current frame;
8   estimating motion vectors between a reference frame and the current
9   frame;
10   determining a sum of absolute difference (SAD) based on a motion
11   compensated residual between the reference frame and the current frame;
12   selecting an encoding mode for each macro block in the current frame
13   based on the sum of absolute difference, the motion vectors and the
14   multiplier value; and
15   encoding the motion compensated residual based on the encoding
16   mode, multiplier value and the number of allocated bits.

1   2. (original) The method of claim 1, in which the encoding further
2   comprises:
3   determining a quantization scale as a function of only the multiplier
4   value and the number of bits assigned to the current frame;
5   extracting rate and distortion information associated with encoding
6   each macro block in frame DCT mode and field DCT mode;

7   selecting a DCT type for each macro block in the current frame based

8   on the multiplier value and the rate and distortion information;

9   transforming each macro block according to the selected DCT type;

10   quantizing each transformed macro block according to the selected

11   quantizer; and

12   variable-length coding each quantized macro block as a bitstream.

3. (canceled)

1   4. (original) The method of claim 1, in which the multiplier value is

2    $\lambda = 2 \ln 2 \times \sigma^2 2^{-2R}$, where R is the rate, and σ^2 is the variance.

5. (canceled)

6. (canceled)

7. (canceled)

1   8. (original) The method of claim 1, in which the selecting of the encoding

2   mode further comprises:

3   minimizing a cost function $\text{cost} = D + \lambda R$, where D is the distortion, R

4   is the rate, λ is the multiplier;

5   modeling the distortion D by $D(Q,SAD) = a \times Q \times SAD$, where a is a

6   constant coefficient; and

7   modeling the rate by $R(Q,SAD) = MV + b \times SAD/Q$, where MV is an

8   encoding rate for the motion vectors, and b is a constant coefficient.

1   9. (original) The method of claim 2, in which the selecting of the DCT type

2   is based on the multiplier.

1   10. (original) The method of claim 2, in which the quantization scale is

2   selected with a sliding window.